



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
Before the Board of Patent Appeals and Interferences

In re Patent Application of

HARRIS et al.

Atty. Ref.: SCS -124-1111

Serial No. 10/529,055

TC/A.U.: 3662

Filed: March 24, 2005

Examiner: T. Brainard

For: BISTATIC LASER RADAR APPARATUS

\* \* \* \* \*

March 12, 2010

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Alexandria, VA 22313-1450

Sir:

**SUPPLEMENTAL REPLY BRIEF**

This Supplemental Reply Brief is responsive to the “Supplemental Examiner’s Answer” mailed January 15, 2010, which purportedly responds to Appellants’ Reply Brief dated August 19, 2009. The Supplemental Examiner’s Answer only responds to three specific points in the Reply Brief and Appellant will limit this Supplemental Reply Brief to responding to those points.

**A. The Supplemental Examiner’s Answer to Reply Brief Section A**

The Examiner’s has Responses (1) and (2) which are in response to the above subheading in the Reply Brief.

**(1) Examiner Response (1) page 2 of Supp. Exr. Ans.**

The Reply Brief on page three quotes the Examiner's statement that a "laser radar device that uses a laser beam to scan an area to create a picture of the area" and Appellant notes that this statement "is, at best, not the dictionary definition of a 'bistatic laser radar device' or the definition set out in the specification and used in the claims and, at worst, is simply misleading."

The Examiner's response is to state "[t]he applicant does not give the dictionary definition of laser radar" (page 2). It was noted in the Reply Brief that the Examiner's Answer does not dispute the definition in Appellants' specification for "laser radar," also known as a LIDAR (Reply Brief, page 3, 1<sup>st</sup> paragraph).

Additionally, the Examiner does not dispute that page 4, lines 1-4 of Appellants' specification details the differences between "monostatic LIDAR systems" and "bistatic LIDAR systems." (Reply Brief, page 6, 2<sup>nd</sup> paragraph). Further, the Examiner does not dispute that he is "bound to construe the claim terms as discussed in the Appeal Brief" and as set out in Appellants' specification.

Finally, there is no requirement for Appellants to provide a dictionary definition if the terms used in the claims are well-known terms of art or are defined in the specification. The Examiner apparently now disputes that the claim terms are defined in the specification or that the definitions are well known to those of ordinary skill in the art. In either instance, making of record a dictionary definition is unnecessary.

However, since the Examiner apparently wishes to have a dictionary definition of "laser radar" as used in Appellants' specification (also referred to as LIDAR), Appellants

enclose herewith the first page of the Wikipedia online definition of LIDAR the Wikipedia definition states “Like the similar radar technology, which uses radio waves, the range to an object is determined by measuring the time delay between transmission of a pulse and detection of the reflected signal.” While the definition notes that the term “laser radar” is not strictly accurate (because “laser radar is also in use but is misleading because it uses laser light and not the radiowaves that are the basis of conventional radar”), it is clear that the present specification uses the terms LIDAR and laser radar synonymously.

Regardless of the conventional meaning of the terms, Appellants need only rely upon the original specification for the correct definition of the term “laser radar” and “bistatic laser radar” as this phrase is used in each of the independent claims and the Examiner does not dispute that these terms are included in the specification. Therefore, regardless of the definition in a dictionary, the specification definition controls the construction of the claim.

**(2) Examiner Response (2) page 2 of Supp. Exr. Ans.**

The Examiner states that “a laser radar is not a radar device.” As noted in the Wikipedia definition, there is a distinction between “radio” waves and “light” waves although a physicist will testify that both are transmissions in electromagnetic spectrum, but are of different frequency ranges. However, the equivalency of both systems is in the use of the transmissions, notwithstanding that the term “laser radar” may be somewhat misleading since it uses laser light and not radio waves which are the basis of conventional radar. The Wikipedia article, third sentence states “[l]ike the similar radar

technology, which uses radio waves, the range to an object is determined [in a LIDAR] by measuring the time delay between transmission of a pulse and detection of the reflected signal.”

The Examiner somehow believes that the timing or “temporal aspect of the transmitted and received beam or pulse are not necessary relevant to discussion of a laser radar device” (Supplemental Answer, last two lines on page 2). The above discussion of the similarity of the LIDAR and radar devices and the fact that both use the timing of the delay between transmit and receive to determine distance would seem to put an end to this argument by the Examiner. Quite clearly, as is well known to those of ordinary skill in the art, the Examiner is incorrect.

Moreover, there is a discussion of a bistatic laser radar as the term “laser radar” is used in Appellants’ specification and it clearly identifies the timing or temporal aspect that is required of bistatic laser radar devices. Accordingly, the Examiner’s second response also under the heading of the Appeal Brief and Reply Brief Sections A is simply incorrect.

**B. & C. The Supplemental Examiner’s Answer does not respond to Reply Brief Sections B and C**

It is noted that the Examiner does not dispute any of the fact statements or legal conclusions set out in the Reply Brief Sections B and C and therefore these can be taken as admitted.

**D. The Supplemental Examiner's Answer to Reply Brief Section D**

The Examiner's third response relates to heading D and Appellant's statement made in the Reply Brief indicating that "the transmit and receive beams must be coherent laser beams to be part of a LIDAR. (Reply Brief, page 6, 2<sup>nd</sup> paragraph under heading D).

The Examiner makes the incredible statement that Appellant "does not claim a coherent laser as part of the laser radar nor is it inherently part of a laser radar system." Appellants specify a bistatic laser radar device. As stated in the Wikipedia definition of "Laser," (copy attached) a well-known characteristic of a laser is

"spatially coherent, narrow low-divergence beams, that can be manipulated with lenses. In laser technology, 'coherent light' denotes a light source that produces (emits) light of in-step waves of identical frequency and phase."

While laser light does not necessarily have to be narrow low-divergence beams, they are generally always coherent. This puts to rest the Examiner's new argument essentially alleging that coherent light does not have to be used in a bistatic laser radar. A characteristic of a laser is that it uses coherent light and thus the recitation of "laser" in the preamble of the claim means that coherent light is an inherent part of any laser system.

Of course, as noted in the Appeal Brief and the Reply Brief, the Schneider reference fails to contain any disclosure of laser radar or LIDAR beams and in fact teaches away from them, stating that they are "typically expensive and complex" and Schneider specifically suggests using a different technique called "triangulation." (Schneider, column 1, line 46).

The three points raised in the Supplemental Examiner's Answer clearly demonstrate the Examiner's misunderstanding of basic laser technology, let alone the subset of bistatic laser radar. However, even disregarding these facts, the supplemental Examiner's Answer does not dispute the conclusions reached in Subsection D, i.e., that Appellants' claims require "all points of focus of the transmit beam and all points of focus of the receive beam fall on a common axis within the operable distance range of the device."

This claimed feature clearly distinguishes all other bistatic laser radar devices which have separate transmit and receive channels (the specification definition of "bistatic laser radar" on page 2, lines 3-4). The Examiner's failure to dispute the Appeal Brief and the Reply Brief points of distinction over the cited prior art reference is taken as an admission that there is no evidence supporting the Examiner's position, notwithstanding his misunderstanding of the basic terms of art, i.e., "laser," "LIDAR" and "bistatic."

**E through O. The Supplemental Examiner's Answer does not respond to Reply Brief Sections E through O**

It is noted that the Examiner does not dispute any of the fact statements or legal conclusions set out in the Reply Brief Sections E through O and therefore these can be taken as admitted.

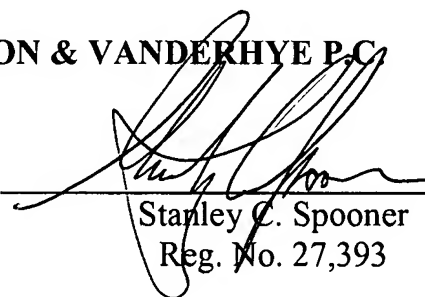
It is noted that Appellants have not requested an Oral Hearing in this case because the issues, as set out in the Appeal Brief, Reply Brief and this Supplemental Reply Brief, are so cut-and-dried that there is believed no need to waste the Board's time in an Oral Hearing. The Examiner has simply failed to meet his burden of going forward with the evidence that establishes a *prima facie* case of either anticipation or obviousness. An expedited decision by the Board regarding the above is respectfully requested.

Thus, in view of the above and the previously submitted Appeal Brief and Reply Brief, the rejections of claims under 35 USC §102 and/or §103 are clearly in error and reversal thereof by this Honorable Board is respectfully requested.

Respectfully submitted,

**NIXON & VANDERHYE P.C.**

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Attachments:

Wikipedia definition, "LIDAR" page 1  
Wikipedia definition, "Laser" page 1

**LIDAR** (Light Detection And Ranging) is an optical remote sensing technology that measures properties of scattered light to find range and/or other information of a distant target. The prevalent method to determine distance to an object or surface is to use laser pulses. Like the similar radar technology, which uses radio waves, the range to an object is determined by measuring the time delay between transmission of a pulse and detection of the reflected signal. LIDAR technology has application in Geomatics, archaeology, geography, geology, geomorphology, seismology, remote sensing and atmospheric physics.<sup>[1]</sup> Applications of LIDAR include **ALSM** (*Air-borne Laser Swath Mapping*), **laser altimetry** or LIDAR Contour Mapping. The acronym **LADAR** (*Laser Detection and Ranging*) is often used in military contexts. The term **laser radar** is also in use but is misleading because it uses laser light and not the radiowaves that are the basis of conventional radar.

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## General description



This lidar (laser range finder) may be used to scan buildings, rock formations, etc., to produce a 3D model. The lidar can aim its laser beam in a wide range: its head rotates horizontally, a mirror flips vertically. The laser beam is used to measure the distance to the first object on its path.

# Laser

From Wikipedia, the free encyclopedia

**Light amplification by stimulated emission of radiation** (**LASER** or **laser**) is a mechanism for emitting electromagnetic radiation, typically light or visible light, via the process of stimulated emission. The emitted **laser light** is (usually) a spatially coherent, narrow low-divergence beam, that can be manipulated with lenses. In laser technology, "coherent light" denotes a light source that produces (emits) light of in-step waves of identical frequency and phase. <sup>[1]</sup> The laser's beam of coherent light differentiates it from light sources that emit *incoherent* light beams, of random phase varying with time and position. Laser light is generally a narrow-wavelength electromagnetic spectrum monochromatic light; yet, there are lasers that emit a broad spectrum of light, or emit different wavelengths of light simultaneously.

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United States Air Force laser experiment



Laser beams in fog and on a car windshield